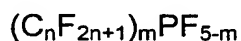


## PATENT CLAIMS

1. Process for the preparation of perfluoroalkylphosphines, characterised in that it comprises at least the reaction of at least one  
5 fluoro(perfluoroalkyl)phosphorane with at least one hydride ion donor.

2. Process according to Claim 1, characterised in that the fluoro(perfluoroalkyl)phosphorane employed is a compound of  
10 the general formula I



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15 in which  $1 \leq n \leq 8$ , preferably  $1 \leq n \leq 4$ , and m is in each case 1, 2 or 3.

3. Process according to Claim 1 or 2, characterised in that the fluoro(perfluoroalkyl)phosphorane employed is a compound selected from the group consisting of difluorotris(pentafluoro-  
20 ethyl)phosphorane, difluorotris(n-nonafluorobutyl)phosphorane, trifluorobis(n-nonafluorobutyl)phosphorane and difluorotris-(n-heptafluoropropyl)phosphorane.

4. Process according to one of Claims 1 to 3, characterised in that  
25 the reduction is carried out without a reaction medium.

5. Process according to one of Claims 1 to 4, characterised in that the hydride ion donor is a compound selected from the group consisting of hydrosilanes, alkylhydrosilanes, metal hydrides,  
30 borohydrides and hydroborates.

6. Process according to Claim 5, characterised in that the alkyl-hydrosilane is triethylsilane or tripropylsilane.
- 5 7. Process according to Claim 5, characterised in that the borohydride is sodium borohydride.
8. Process according to one of Claims 1 to 7, characterised in that the hydride ion donor is employed in an equimolar amount or in excess, in each case based on the amount of fluoro(perfluoro-alkyl)phosphorane employed.
- 10 9. Process according to one of Claims 1 to 8, characterised in that the reaction mixture is refluxed during the reaction.
- 15 10. Process according to one of Claims 1 to 9, characterised in that the duration of the reaction is from 0.5 to 20 hours, preferably from 1 to 15 hours.
- 20 11. Process according to one of Claims 1 to 10, characterised in that the perfluoroalkylphosphine(s) is (are) purified by distillation, preferably under an inert-gas atmosphere, if desired under reduced pressure.
- 25 12. Use of at least one tris(perfluoroalkyl)phosphine for the perfluoroalkylation of chemical substrates.
13. Use according to Claim 12, characterised in that the perfluoroalkylation is carried out in the presence of a base.
- 30 14. Use according to Claim 12 or 13, characterised in that the substrates employed are organic compounds, preferably tricoordi-

nated organoboron compounds and/or organic compounds  
containing carbonyl groups.

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